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does swimming near the duck, often facing her in his eagerness, while she floats about indifferently, or at times shows her interest and appreciation by facing him and throwing up her head a little in a gentle imitation of his forcefulness.

The courtship of the Eider, although less striking and elaborate, bears a strong family resemblance to that of the Golden-eye.



NOTES ON THE FLORIDA GALLINULE (*GALLINULA GALEATA*) IN PHILADELPHIA COUNTY, PA.

BY RICHARD F. MILLER.

It is a generally well known fact that our birds are slowly becoming fewer in the vicinity of our great cities, and on this account it is gratifying to record the discovery of a species inhabiting a restricted area near Philadelphia, which appeared here only recently, and is annually increasing in numbers. This is the Florida Gallinule, a large bird, whose existence as a summer resident in Southeastern Pennsylvania was unknown until 1904, when I found it breeding at Port Richmond, Philadelphia County, in a deep-water cattail marsh, and, as in all such discoveries, the detection of the birds was purely accidental.

Probably the reason it has escaped notice is on account of its secretive habits, and this alone has saved it from destruction by gunners. In my opinion, it has been overlooked chiefly because very few of our ornithologists are enthusiastic marsh nest hunters, and it seems to me that their ardor is deteriorating, as few of them are ambitious enough to don old clothes and wade through slimy mud and dirty water in quest of knowledge of marsh birds. This is probably the reason why there is so little known regarding the nidification and other habits of these birds.

A brief summary of our knowledge of the occurrence of the Florida Gallinule in this locality, prior to its discovery as a summer resident, will not be amiss. It appears not to have been very well known to the older ornithologists, who generally regarded it as a

rare transient. In Warren's 'Birds of Pennsylvania' (2d revised edition, page 73), we learn that it was a "regular, but rather rare spring and fall migrant," and that it "probably breeds." In Stone's 'Birds of Eastern Pennsylvania and New Jersey' it is listed (page 32) as a "rare or irregular transient about Philadelphia," and on page 68 as a "regular transient but not very common." There is apparently nothing further on record regarding the bird's status in the Delaware Valley. There are, however, some additional records of birds shot, but all of these were evidently migrants and in no sense modify the statement made above.

The marsh where the Florida Gallinule was first found nesting in the Delaware Valley, is located at Port Richmond, in Philadelphia County, in the northeastern part of the city, less than five miles from the city hall, and is the largest marsh in that part of the country. It comprised about twenty acres when I first visited it, but it has since been reduced to about one third of that size. It lies between two streets (which are dirt-covered sewers used only by pedestrians) and the bank of the Delaware River, and has been divided into three parts by the intersecting of two streets and a canal. The bank carries a railroad, which is used daily by a noisy shifting engine, and a large dump on the west is worked daily, and is the chief cause of the rapid decrease in the size of the marsh.

In the immediate vicinity of the marsh there are several large manufacturing plants. This marsh is now covered with a dense growth of cattails growing in water from one to four feet deep; formerly it contained large patches of calamus, but the struggle for existence of this reed ceased in 1906, when the water killed it. Some spatterdocks and *Peltandra* still grow along the edges and duckweeds cover the water. The marsh is about six feet below the surface of the streets, and is drained by several sluices, the water rising and falling with the tide in the Delaware River, and is thus always quite fresh.

My acquaintance with the Florida Gallinule began in this marsh on June 1, 1904, when, while hunting for Least Bittern's nests, I suddenly flushed a bird from a patch of reeds. My first nest was found on June 21, 1904, and the second (of the same pair) on July 1; both sets consisted of ten eggs. This was probably the only pair inhabiting the marsh in 1904, but as I did not thoroughly explore it, not then being inured to marsh exploration, it is impossible for me

to be positive. Subsequently, however, I have carefully explored the marsh every year, and the results of my investigations and observations I am now placing on record.

The Florida Gallinule is an early breeder in the Port Richmond marsh. It puts in an appearance in April, arriving generally after the middle of the month, and before the vegetation of the marsh has reached a height sufficient to afford them concealment. To avoid destruction at this season from gunners they skulk and hide in the rank, tangled mass of dead reeds. It commences nest building as soon as the reeds are high enough for them to build in, and the nest is seldom hidden, often being placed in thin reeds, and sometimes in a solitary clump.

The following records comprise my data upon its time of arrival and the date when the first nests were discovered.

Arrived April 21, 1905;	had 12 highly incubated eggs on May 31.
“ April 27, 1906;	“ 12 “ “ “ “ 22.
“ April 28, 1907;	“ 14 “ “ “ “ 29.
“ April 25, 1908;	“ 11 “ “ “ “ 27.
“ April 16, 1909;	“ 13 “ “ “ “ 22.

Supposing the period of incubation for eggs of *Gallinula* to be 21 days, the same as that of the common hen, and giving 15 days incubation to all of these sets, we find that the first clutch was completed on May 16, the second on the 7th, the third on the 14th, the fourth on the 12th, and the fifth on the 6th. Reasoning that the eggs were laid in regular sequence, for the Gallinule lays daily, we can find the minimum time of the nest completion by subtracting the number of eggs in a set; *e. g.*, the first nest was completed on May 4, the second on April 25, the third on May 1, the fourth on May 1, and the fifth on April 24. These suppositions will serve to show that the Gallinule is an early nester, taking into consideration the time of its arrival, and that it loses no time in mating. It is a prolific layer too, for I robbed one pair three times in 1908, just to ascertain how often they would lay; on May 27, June 12, and July 10. I took from their nest nine, nine, and *eighteen* eggs, respectively, and have no doubt but that they had another set laid before August.

This pair occupied a small part of the marsh lying between one of the streets and an extension of the dump, so there can be no doubt

that the three sets were the product of the one pair, as no others were ever seen in it. The similarity of the eggs of the three sets in shape, size and coloration precluded any probability of their being the product of any other than the same female. The large set contained two eggs of abnormal size, and in incubation the clutch varied from fresh to pipped, the majority of them being over half incubated; two were rotten.

The following table will show how the Gallinule has held its own in such a frequented locality, despite gunners and nest robbers:—

1904, 1 or more pairs. (None were seen in the marsh in 1903.)

1905, 5 pairs, perhaps 6.

1906, 5 or 6 pairs. This year the marsh was not thoroughly explored.

1907, 9 pairs; one pair at Aramingo, a locality a mile north of this place.

1908, 9 or 10 pairs; one pair at Aramingo.

1909, 10 pairs; one pair at Frankford and another at Bridesburg. The former locality is a half mile above Aramingo, and these birds deserted it early in June, when boys despoiled their nest and the drought dried up the marsh, for the Aramingo marsh where they successfully raised a family. Bridesburg is two miles above Port Richmond on the Delaware River. The other two localities are upon the Frankford Creek, a tide-water tributary of the Delaware.

It will be seen that in four or five years the Florida Gallinule has more than doubled its numbers in this restricted area in spite of the decreasing size of the marsh, and it also is beginning to spread out in this vicinity. This is a good sign and insures the bird as a permanent summer resident when this marsh is filled in, as it will be in a few years, as the work of filling is steadily continued. I have never seen the Florida Gallinule in this vicinity at any other locality than those already cited, but Mr. Richard C. Harlow has observed it at Tinicum, Delaware County, Pa., in summer, and one was shot in October, 1907, in Camden, N. J. Both of these localities are along the Delaware River and contain good breeding grounds for the Gallinule, as I have ascertained in winter, and hope some day to confirm my suspicions by finding them there in summer.

The Florida Gallinule departs in October, and by November they are usually all gone; my latest record is November 16, 1909.